REMARKS

Reconsideration of this application is requested. Claims 1-23 are in the case. The dependencies have been amended to conform with the scope prior to the Preliminary Amendment filed September 28, 2001. The requisite claims fee is attached.

I. SPECIFICATION

The specification has been objected to in view of the spelling of "maxamise". That has been corrected in the present response.

Customary headings have been presented in the specification, including a brief description of the drawing. No new matter is entered.

II. CLAIM OBJECTIONS

Claims 8, 9, 11, 19, 20 and 23 have been objected to for the reasons detailed on page 2 of the Action. Those informalities have received attention in the presentation of the amended claims with this response. Withdrawal of the objections to the claims is now respectfully requested.

III. THE 35 U.S.C. § 112, FIRST PARAGRAPH, REJECTION

Claims 1-3 stand rejected under 35 U.S.C. § 112, first paragraph, on the ground that the specification while enabling for one catalyst, such as $Mo_dV_bAu_dNb_eO_f$ or $Mo_dV_bP_dNb_eO_f$, allegedly does not reasonably provide enablement for all catalysts known in the field of chemistry. This rejection is respectfully traversed.

Claims 1-3 are fully enabled by the present specification. A person of ordinary skill would have no difficulty in carrying out the invention as claimed based on the disclosure and the level of ordinary skill in this art. In particular, one of ordinary skill would be aware that of numerous catalysts and appropriate process conditions that would be suitable for the oxidation reaction zone and the second reaction zones of the integrated processes of claims 2 and 3. This is clear from the specification which, for example, discloses a number of references from which the person of ordinary skill may select catalysts for the oxidation of alkane to alkene and carboxylic acid (see, for example, page 5, line 29 through page 8, line 2). Thus, one of ordinary skill, as of the filing date of the application, would have been able to carry out the processes as claimed in the present application based on the disclosure and without the exercise of undue experimentation. Withdrawal of the outstanding 35 U.S.C. § 112, first paragraph, rejection is respectfully requested.

IV. THE 35 U.S.C. § 112, SECOND PARAGRAPH, REJECTION

Claims 1-3 stand rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite for the reasons stated on page 4 of the Action. That rejection is respectfully traversed.

It is not understood why the Examiner has objected to the phrases "a pre-determined value", "concentration", "pressure", "temperature", and "residence time". These expressions are common-place in patents dealing with the technology of the present case. One of ordinary skill would have no difficult in understanding these terms in the context of the presently claimed invention as disclosed in the specification and in

light of the level of ordinary skill in this art. Withdrawal of the 35 U.S.C. § 112, second paragraph, rejection is accordingly respectfully requested.

IV. THE OBVIOUSNESS REJECTION

Claims 1, 4, 7 and 11-23 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. Patent 5,162,578 to McCain, Jr. et al in view of U.S. Patent 4,899,003 to Manyik et al. That rejection is respectfully traversed.

As claimed, the process of the present invention is for the oxidation of a C_2 to C_4 alkane to produce the corresponding alkene and carboxylic acid. The process comprises contacting, in an oxidation reaction zone, the alkane, molecular oxygen-containing gas, and the corresponding alkene and optionally, water, in the presence of at least one catalyst active for the oxidation of the alkane to the corresponding alkene and carboxylic acid, to produce a product stream comprising alkene, carboxylic acid and water. In the process, the molar ratio of alkene to carboxylic acid produced in the oxidation reaction zone is adjusted or maintained at a pre-determined value by controlling the concentrations of the alkene and optional water in the oxidation reaction zone and, optionally, by also controlling one or more of the pressure, temperature and residence time of the oxidation reaction zone.

McCain discloses a process for the selective production of acetic acid from oxidation of ethane and/or ethylene (and in the presence of steam). The objective of McCain is to produce high levels of acetic acid at the expense of ethylene, and discloses that unexpectedly high selectivities and productivities of acetic acid can be

achieved by utilizing a mixture of two catalysts comprising an oxidation catalyst (A) and an ethylene hydration and/or ethylene oxidation catalyst (B) (column 1, lines 5-20). This is different from the present process, in which the ethylene/acetic acid production ratio is determined by controlling the amount of ethylene in the feed.

McCain does not disclose or suggest that the ratio of ethylene to acetic acid in the product stream may be adjusted by controlling the concentration of ethylene in the feed. Furthermore, in McCain, ethylene is only an optional and not a required feed component.

The above-noted deficiencies of McCain are not cured by Manyik. Manyik discloses a multi-stage (i.e., at least two stages) process for the oxydehydrogenation of ethane to ethylene. Water and acetic acid are added or removed at an inter-stage point in the multi-stage process. Thus, water may be added to the input gaseous stream of at least one stream other than the first stage of the series (column 1, lines 58-61). Alternatively, water and acetic acid is removed from the outlet gaseous stream of at least one stage other than the last stage (column 1, lines 55-58). The water is utilized to vary the ratio of acetic acid to ethylene in the product from the multi-stage process (column 5, line 66 to column 6, line 2 and column 6, lines 20-23).

As acknowledged in the present specification at page 2, lines 17 to 19, the effect of water on oxidation of ethane to acetic acid (on a single-stage process) is already known from U.S. Patent 4,250,346. This effect is also shown in Example 2 of Applicants' specification (Comparative Example). Manyik differs from the present invention in that there is no ethylene in the initial feed, only ethane. Thus Manyik does

not disclose or suggest that the ratio of ethylene to acetic acid in a product stream can be adjusted by control of the ethylene concentration in the feed.

In light of the above, it is clear that one of ordinary skill would not have resorted to the combined disclosures of McCain and Manyik, and would not have been motivated to arrive at the presently claimed invention based on those disclosures. Absent any such motivation, it is clear that a *prima facie* case of obviousness is not generated by the combined disclosures of McCain and Manyik. Withdrawal of the outstanding obviousness rejection based on those two references is accordingly respectfully requested.

Claims 2, 3, 5, 6 and 8-10 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. Patent 3,458,406 to Fisher et al in view of Manyik et al. That rejection is respectfully traversed.

Claims 2 and 3 of the present invention relate, respectively, to integrated processes for the production of alkenyl carboxylate, e.g., vinyl acetate, and alkyl carboxylate, e.g., ethyl acetate. Step (a) of claims 2 and 3 is equivalent to the process of claim 1.

Fisher relates to the purification of vinyl acetate, and, in particular, to a process for the separation of ethyl acetate and methyl acetate therefrom. As noted by the Examiner, the oxidation of alkane to the corresponding alkene and carboxylic acid is not disclosed in Fisher.

The deficiency of Fisher is not cured by Manyik. First, one of ordinary skill would not have been motivated to combine Manyik and Fisher since those two references relate to completely different technical fields. Even if the two disclosures were

combined (it is believed that would not have occurred to one of ordinary skill), Manyik (for the reasons stated above) is completely silent regarding adjusting the alkene/carboxylic acid product ratio through control of the concentration of alkene in the feed. As there is no disclosure or suggestion of an alkane and alkene oxidation reaction in Fisher, the combination of Fisher and Manyik would not have led the skilled person to arrive at the present invention.

In light of the above, it is clear that one of ordinary skill would not have been motivated to combine the Fisher and Manyik disclosures, and no *prima facie* case of obviousness is generated by those references, either when taken singly or in combination. Withdrawal of the outstanding obviousness rejection based on the combination of Fisher and Manyik is respectfully requested.

Allowance of the application is awaited.

Respectfully submitted,

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